

Docket No. F-7312

Ser. No. 10/068,100

REMARKS

Claims 1 - 12 remain in this application. Claims 1 - 12 are rejected. Claims 1 -12 are amended herein to clarify the invention, to express the invention in alternative wording, to more particularly point out and distinctly claim and to address matters of form unrelated to substantive patentability issues. No new matter is added by any of the amendments to the claims. Support for all amendments is found in the original specification.

In the Office Action, previous claims 1 - 12 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention.

Previous claim 1 was also rejected under under 35 U.S.C. 112, second paragraph for the specific reason that the Examiner found the claim to lack a recitation of the cooperative structural relationship of the eccentricity and the rattling ranges, with respect to the bearing.

Claim 1 has been amended to overcome all of the 35 U.S.C. 112, second paragraph based rejections by canceling therein the lines relating to eccentricity tolerance and rattling tolerance, in order to clarify the claim.

In addition, the numerical relationship between the guide clearance (α) and the pocket clearance (β) has been amended from a "less than or equal to"

Docket No. F-7312

Ser. No. 10/068,100

relationship (\leq) to a "less than" relationship to emphasize the technical contribution of the apparatus of the present application over the prior art.

Similar amendments in changing the respective "less than or equal to" relationships to "less than" relationship have also been effected to claims 5, 7, 9, 10, 11, and 12, also to emphasize that applicant considers this to represent a specific contribution of the various other embodiments of the apparatus of the present application over the prior art.

The foregoing amendments to the claims are believed to overcome all of the 35 U.S.C. 112, second paragraph based rejections of the claims.

In the Office Action, previous claims 1, 2, 4, and 9 were rejected under 35 U.S.C. 102(b) as being anticipated by and unpatentable over U.S. Patent 5,522,667 to Miyake ("Miyake").

The Examiner has contended that the eccentricity and rattling tolerances of the apparatus of the present application are inherently part of the apparatus of Miyake, given the structure disclosed therein.

Applicant repeats and restates with full force and conviction, with regard to the claims in the present application after entry of this Amendment, the previously respectfully taken position of disagreement with the Examiner regarding the Examiner's analysis and conclusion of anticipation by Miyake and thus Applicant again traverses the rejection of the claims previously in the present application, as

Docket No. F-7312

Ser. No. 10/068,100

set forth in the present Final Office Action, made by the Examiner under 35 U.S.C. 102(b) as being anticipated by Miyake.

Applicant here repeats and restates with full force and conviction the remarks made in the previous Amendment, filed in the case on February 10, 2004, with regard to distinguishing the apparatus of the present application, as recited according to the claims, from the apparatus of Miyake.

Applicant respectfully, yet vigorously disagrees with the Examiner's interpretation of the standards of 35 U.S.C. 102(b) as encompassing an inference of inherency in a cited prior art reference (Miyake) with regard to an essential feature and aspect of the present invention (eccentricity and rattling tolerances).

Applicant respectfully reiterates the previously made remark regarding the correct standard of interpretation of the statutory basis for an anticipatory rejection under 35 U.S.C. 102(b) as requiring that each and every element of the claimed invention be disclosed in a single cited reference, and that if such reference fails to disclose even at least one element of the claimed invention, that reference cannot be held to be anticipating.

It is again pointed out, and in summary of the previous arguments made, that at the very least, the structures of the two apparatuses are completely different. The ball bearing apparatus of the present invention differs from the apparatus of Miyake, and consequently cannot be said to be anticipated there by, by having an

Docket No. F-7312

Ser. No. 10/068,100

annular cage, positioned between said first and second bearing rings, and having a plurality of cylindrical through pockets positioned around a circumference thereof.

Applicant respectfully believes that the Examiner's subsequent remarks in the Office Action, under the 35 U.S.C. 103(a) based obviousness rejection over Miyake, wherein the Examiner concedes that Miyake does not disclose "an annular cage being guided by ..." is an admission and a contradictory position to the previous position of alleging an anticipatory rejection under 35 U.S.C. 102(a), since if the Miyake apparatus lacks the annular ring in the former rejection, it cannot simultaneously possess and meet the "each and every" element requirement for a rejection under 35 U.S.C. 102(b).

Moreover, in the present situation, there is nothing in Miyake, as has been recognized by the Examiner, that explicitly teaches, discloses, or even suggests that the apparatus of that reference utilizes or in any way takes into consideration an eccentricity tolerance and/or a rattling tolerance parameter, as such terms are defined and used by Applicant in the present application, and which are at least one underlying reason accounting for the apparatus of the present application having the structure and design features and parameters that it does.

In the ball bearing of the present application, the relative size difference between α and β is a feature that is of major significance. Miyake does not teach,

Docket No. F-7312

Ser. No. 10/068,100

disclose, or suggest a ball bearing design that relates to a size relationship between the parameters α and β , let alone a specific design wherein $\alpha < \beta$.

Miyake only discusses a size relationship between the outside dimensions of the ball and the outside dimensions of the cage.

In the present invention, in contrast, by setting the relationship between α and β , such that $\alpha < \beta$, the size of the annular cage does not have any effect on the balls, even when they rotate eccentrically. In the apparatus of the present application, as cage movement is stabilized, the movements of the balls are less likely to be slowed down, and minute slippage of the balls is controlled so that rolling movement of the balls is stabilized, and vibration and temperature rise are reduced, leading to prolonged life of the ball bearing.

Miyake also does not teach, disclose, or suggest the effect of the relationship between α and β on the rolling movement of the balls. In Miyake, the turbo charge response and the durability of the cage is improved as a result of a decrease in contact resistance between the cage and guide surfaces, which leads to a decrease in torque and cage vibration, which are not, however, due to the movement of the balls.

Applicant respectfully submits that the Examiner has incorrectly interpreted the disclosure in Miyake of certain respective dimensions and parameters, including the depiction of those dimensions on the drawings of that reference, as being

Docket No. F-7312

Ser. No. 10/068,100

anticipatory of the teachings of the present application, when, in fact, the underlying technical concepts of the ball bearing of the present application is completely different from that of Miyake.

Moreover, there is no basis for the Examiner suggesting that the ball bearing apparatus of Miyake inherently has the characteristics of the apparatus of the present application. In addition to the fact that the structure of the two devices is completely different, as discussed above, there is nothing in Miyake that indicates that the inventor there was able to identify, or was even aware of, the problems of the prior art that the present applicant has discerned and has designed an apparatus that successfully overcomes. Because nothing in Miyake is indicative that the inventor there was even aware of the problems in prior art ball bearing devices relating to matters involving eccentricity tolerance and rattling tolerance factors, even if the Miyake device were structurally the same as, and were deemed to coincidentally have the same intrinsic features as, the apparatus of the present application, Miyake's unawareness of the related problems and issues relating to eccentricity and rattling tolerances, and the design of a ball bearing that successfully overcomes problems related thereto, were made under circumstances and conditions under which it cannot be said that he was in possession of the invention as was the present inventor and applicant at the time of his making the present invention, therefore, Miyake cannot be said to anticipate the present

Docket No. F-7312

Ser. No. 10/068,100

invention, even inherently. Without admitting or suggesting that such conditions apply to the instant situation, Applicant respectfully submits and posits that although it is not totally inconceivable that the outcome and conclusion could be different in a situation where it was incontrovertible that a reference, such as Miyake here, made it clear that the inventor was at least aware of the problem that his invention overcame, even if the inventor was not fully or specifically aware of how the resulting apparatus of the invention was able to overcome the problem or limitation in the prior art or why the specific design structure of the invention was operationally successful. Under such a hypothetical situation, the inventor would at least be aware that the invention overcame a problem or limitation of the prior art, even though the basis for the invention successfully doing so may not be known to or clearly understood by the inventor at the time of the invention, but nevertheless would be intrinsic to or inherent in that particular invention.

Therefore, it is respectfully submitted that there is no basis for sustaining the 35 U.S.C. 102(b) based anticipation rejection of either the previous claims of the present application, or the amended claims as presented by this Amendment, over Miyake. Accordingly, Applicant respectfully traverses the rejection. It is respectfully requested that the Examiner withdraw that rejection, and it is further respectfully submitted that such a rejection is similarly inapposite to any or all of

Docket No. F-7312

Ser. No. 10/068,100

the claims in the amended set of claims presented herein above for entry and consideration by the Examiner.

In the Office Action, previous claims 1 - 12 were rejected under 35 U.S.C. 103(a) as being obvious and unpatentable over Miyake.

The Examiner has contended that Miyake discloses an apparatus having all of the structural elements and features of the apparatus of the present application, as recited according to the above-mentioned claims, *except* for not explicitly disclosing the eccentricity and rattling tolerance features of the apparatus of the present application.

The Examiner further contends, however, that it would have been obvious to a person of ordinary skill in the art at the time the present invention was made, to have established eccentricity and rattling tolerance values for a bearing as in Miyake, so as to provide for noise reduction and wear reduction of the bearing and to provide a bearing of increased accuracy.

The Examiner contends that Miyake discloses all of the features of the apparatus of the present application except for the annular cage being guided by an inner fixed ring by setting a relationship between a guide clearance α and a pocket clearance β at $\alpha < \beta$ if the guide clearance of the annular cage with respect to the inner ring is α and the pocket clearance of a pocket inner wall face with respect to the ball is β .

Docket No. F-7312

Ser. No. 10/068,100

From this, the Examiner contends that it would have been obvious to a person of ordinary skill in the art at the time the present invention was made, to have reversed the relationship of the cage, balls, and outer ring of Miyake to that as used according to the apparatus of the present application, and that the making of such a reversal of essential elements of a working pair requires only routine skill in the art.

With regard to previous claims 5 - 8, 10 and 12, the Examiner contends that Miyake discloses all of the features of the apparatus of those claims except for explicitly stating the equations describing the eccentricity and rattling tolerances, with regard to guide clearance (α) and pocket clearance (β), rotational centrifugal force x , and thermal expansion y .

The Examiner has contended that with regard to those parameters, it would have been obvious to a person of ordinary skill in the art at the time the present invention was made to modify the apparatus of Miyake in such a way in order to limit vibration and reduce heat.

Applicant respectfully disagrees with each and every one of the Examiner's foregoing bases for making an obviousness type rejection under 35 U.S.C. 103(a), based on the following arguments directed to the Examiner's analysis and conclusions with respect to the specific ones of the aforesaid claims which were rejected in view thereof.

Docket No. F-7312

Ser. No. 10/068,100

Therefore, it is respectfully submitted that there is no basis for sustaining the 35 U.S.C. anticipation rejection of either the previous claims of the present application, or the amended claims as presented by this Amendment, over Miyake. Accordingly, Applicant respectfully traverses the rejection. It is respectfully requested that the Examiner withdraw that rejection, and it is further respectfully submitted that such a rejection is similarly inapposite to any or all of the claims in the amended set of claims presented herein above for entry and consideration by the Examiner.

With regard to the Examiner's general rejection of previous claims 1 - 12, Applicant respectfully submits that there is nothing in Miyake itself that teaches, discloses, or suggests the use of an annular gage element in the ball bearing apparatus of that reference, therefore there is no basis in Miyake itself to have even suggested to a person of ordinary skill in the art at the time the present invention was made, to utilize such an element in the apparatus of Miyake. It is respectfully submitted that any utilization of such an annular cage element in the apparatus of Miyake is one that has been made out of hindsight.

Similarly, there is nothing in Miyake itself that would have provided motivation to such a person of ordinary skill in the art at the time the present invention was made, to reverse the relationship among the cage element of that device and the balls and outer ring. It is respectfully submitted that motivation to

Docket No. F-7312

Ser. No. 10/068,100

try is not sufficient motivation for purposes of obviousness under 35 U.S.C. 103(a).

Therefore, it is respectfully submitted that there is no basis for sustaining an obviousness type rejection of any of previous claims 1 - 12 over Miyake together with an allegation of obviousness to a person of ordinary skill in the art at the time the present invention was made to additionally provide an annular cage with pockets and the indicated clearances specified according to the present application or a reversal of the relationship among certain elements of the apparatus.

Accordingly, it is respectfully requested that this rejection be withdrawn. It is further respectfully submitted that such rejection is not applicable to any of the claims as amended by the present Amendment, and should not be applied thereto.

In the Office Action, previous claims 5 - 8, 10 and 12 were rejected under 35 U.S.C. 103(a) as being obvious over Miyake, which the Examiner contends discloses an apparatus having all of the elements and features of the apparatus of the present application, except for setting forth the specific equations pertaining to eccentricity tolerance and rattling tolerance, with regard to guide clearance (α), pocket clearance (β), rotational centrifugal force (x) and thermal expansion (y).

The Examiner has contended that those equations and the aforesaid parameters would have been obvious to a person of ordinary skill in the art at the

Docket No. F-7312

Ser. No. 10/068,100

time the present invention was made based solely on the intended use of the Miyake apparatus, since use of the equations and the parameters taught by the present application are alleged to be inherent in order to limit vibration and reduce heat in a ball bearing design in order to avoid ball seizure.

With regard to the Examiner's specific rejection of previous claims 5 - 8, 10 and 12, Applicant respectfully submits that there is nothing in Miyake itself that teaches, discloses, or suggests the use of the specific, particular equations, which are based on and incorporate the above-mentioned parameters (α , β , x , and y), as are utilized and recited in the claims of the present application. Therefore there is no basis in Miyake itself to have even suggested to a person of ordinary skill in the art at the time the present invention was made, to rely on those specific equations, and/or that the parameters utilized therein, as used by Applicant, and which describe the eccentricity and rattling tolerances that are taken into consideration in setting the guide clearance and pocket clearance in the design of the apparatus of the present application, and to incorporate those parameters and design features into an apparatus according to Miyake.

It is respectfully submitted that any argument that Miyake teaches the utilization of an annular cage element in its apparatus is one that is based on an incorrect interpretation, understanding, and comparison of the apparatuses of

Docket No. F-7312

Ser. No. 10/068,100

Miyake and the present application, and, moreover, is one that is made out of hindsight.

Similarly, there is nothing in Miyake itself that would have provided motivation to such a person of ordinary skill in the art at the time the present invention was made, to reverse the relationship among the cage element of that device and the balls and outer ring. It is respectfully submitted that motivation to try is not sufficient motivation for purposes of obviousness under 35 U.S.C. 103(a).

Therefore, it is respectfully submitted that there is no basis for sustaining an obviousness type rejection of any of previous claims 1 - 12 over Miyake together with an allegation of obviousness to a person of ordinary skill in the art at the time the present invention was made to additionally provide an annular cage with pockets and the indicated clearances specified according to the present application or a reversal of the relationship among certain elements of the apparatus.

Accordingly, it is respectfully requested that this rejection be withdrawn. It is further respectfully submitted that such rejection is not applicable to any of the claims as amended by the present Amendment, and should not be applied thereto.

No additional claims fees are due with the filing of this Amendment.

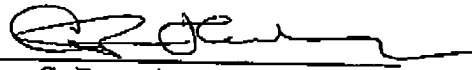
Docket No. F-7312

Ser. No. 10/068,100

Applicant respectfully requests a three month extension of time for responding to the Office Action. Please charge the fee of \$980.00 for the extension of time to Deposit Account No. 10-1250. A Notice of Appeal accompanies this response.

In light of the foregoing, the application is now believed to be in proper form for allowance of all claims and notice to that effect is earnestly solicited. Please charge any deficiency or credit any overpayment to Deposit Account No. 10-1250.

Respectfully submitted,
JORDAN AND HAMBURG LLP

By 
C. Bruce Hamburg
Reg. No. 22,389
Attorney for Applicants

Jordan and Hamburg LLP
122 East 42nd Street
New York, New York 10168
(212) 986-2340

enc: Notice of Appeal